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ART 34 AMDT**WHAT IS CLAIMED IS:**

1. A method for producing polyunsaturated fatty acids from algae, comprising the step of applying at least growth-limiting factor to an algae culture, causing growth arrest of said algae culture and production and stocking by algae in culture of polyunsaturated fatty acids.
2. The process of claim 1, wherein the growth-limiting factor is silicate deprivation.
3. The process of claim 1, wherein the growth-limiting factor is a nutrient deprivation.
4. The process of claim 1, 2 or 3, wherein more than one growth-limiting factor is applied.
5. The process of claim 1, 2, 3 or 4, wherein the algae is diatomaceous *Chaetoceros gracilis*.
6. The process of claim 1, 2, 3 or 4, wherein the algae is diatomaceous *Skeletonema costatum*.
7. The process of claim 1, 2, 3, 4, 5 or 6, wherein the growth-limiting factor is applied at the end of the exponential growth phase.
8. The process of claim 1, 2, 3, 4, 5, 6 or 7, wherein the growth limiting factor is applied once the algae culture has reached a concentration of at least 10^7 cells/mL.